

National Aeronautics and Space Administration

STTR: Small Business Technology Transfer Program Solicitation

*A searchable version of this document is located at:
<http://sbir.nasa.gov>*

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The cover is designed by James Kalshoven and Jay Friedlander using the facilities of the Space Science Data Operations Office of the NASA Goddard Space Flight Center in Greenbelt, Maryland. It exhibits science data images from various NASA satellites. These global images frame an image of the sun taken in four different wavelengths processed from the SOHO (Solar and Heliospheric Observatory) satellite. The solar corona surrounding these is from an eclipse image provided by Fred Espenak of the Laboratory for Extraterrestrial Physics, also at the Goddard Space Flight Center.

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2000 NASA Small Business Technology Transfer Program Solicitation

1. Program Description

1.1 Introduction

The National Aeronautics and Space Administration (NASA) invites Small Business Concerns (SBCs), in collaboration with a Research Institution (RI), to submit proposals for cooperative research under this 2000 Solicitation for the Small Business Technology Transfer (STTR) Program. The NASA STTR Program facilitates transferring the nation's investment in research into new commercial technologies for advancing U.S. economic competitiveness and high-tech development.

This Solicitation contains program background information, outlines eligibility requirements for participants, describes the three STTR program phases, and provides information for submitting responsive proposals. The Solicitation period for Phase-I proposals begins March 1, 2000 and ends May 10, 2000. Unsolicited proposals will not be accepted.

To be eligible for selection, a proposal must be based on an innovation having high technical or scientific merit that is responsive to a NASA need described by a research topic in this Solicitation. Proposals involving high risk are encouraged when the anticipated payoff is great. A proposal directed towards systems studies, market research, and routine engineering design is considered non-responsive. Selection preference will be given to eligible proposals where the innovations are judged to have significant potential for commercial application.

Proposals submitted in response to this Solicitation must be jointly developed by the SBC and the RI, and must include all relevant documentation as required in Section 3. At least **40 percent** of the work (amount requested including cost sharing, less fee, if any) is to be performed by the SBC as the prime contractor, and at least **30 percent** of the work is to be performed by the RI.

Subject to the availability of funds, NASA plans to select about 20 proposals in August 2000 for negotiation of Phase-I fixed-price contracts. NASA anticipates that about 35 percent of these Phase-I projects will be selected for Phase-II. The FY 2000 NASA STTR Program budget is approximately \$5.6M

1.2 Program Background

1.2.1 Legislative Basis. The legislative basis for this Solicitation is the Small Business Research and Development Enhancement Act of 1992 (P.L. 102-564, October 28, 1992). It amends Section 9 of the Small Business Act (15 U.S.C. 638). On August 10, 1993, the Small Business Administration (SBA) issued a Policy Directive for the general conduct of STTR Programs within the Federal Government. The current law authorizes agencies participating in the STTR Program to expend with small business concerns not less than 0.15 percent of their extramural Research/Research and Development (R/R&D) budgets in FY 2000.

1.2.2 Program Purposes. The purposes of the STTR program as established by law are: to stimulate technological innovation in the private sector; to strengthen the role of small business concerns in meeting federal research and development needs; to increase the commercial application of these research results; and to encourage participation of socially and economically disadvantaged persons and women-owned small businesses including increasing the commercialization of research results.

1.3 Program Management

The NASA Office of Aero-Space Technology provides overall policy direction for the STTR program. The Program Management Office is hosted at the Goddard Space Flight Center. The NASA Installations identify R&D needs, evaluate proposals, make recommendations for selections, and manage individual projects. Proposals submitted in response to this Solicitation must present an innovative technology concept, which is applicable to the following Research Topics and NASA Centers of Excellence:

1. Research Topic: Information Technology
Installation: Ames Research Center
<http://www.arc.nasa.gov/>
2. Research Topic: Atmospheric Flight Operations
Installation: Dryden Flight Research Center
<http://www.dfrc.nasa.gov/>
3. Research Topic: Scientific Research
Installation: Goddard Space Flight Center
<http://www.gsfc.nasa.gov/>
4. Research Topic: Space Propulsion
Installation: Marshall Space Flight Center
<http://www.msfc.nasa.gov/>
5. Research Topic: Rocket Engine Test Operations
Installation: Stennis Space Center
<http://www.ssc.nasa.gov/>

Research Topics from the other NASA Centers of Excellence will be included in future solicitations.

1.4 Three Phase STTR Program

The NASA STTR Program is a three-phase program utilizing the entrepreneurial talents of the SBC to transfer technology resident at the RI for meeting the needs of both NASA and the commercial marketplace.

1.4.1 Phase-I. The purpose of Phase-I is to determine the scientific, technical, and commercial merit and feasibility of the proposed cooperative R/R&D effort, and the quality of the SBC's performance with a relatively small NASA investment before consideration of further Federal support in Phase-II. NASA funding for each Phase-I contract is limited to \$100,000. Contractors have up to 12 months to submit their final report. Successful completion of Phase-I objectives is a prerequisite to Phase-II consideration.

Phase-I must concentrate on establishing the scientific or technical merit and feasibility of the proposed innovation and on providing a basis for continued development in Phase-II. Proposals must conform to the format described in Section 3.2 of this Solicitation. Evaluation and selection criteria are described in Section 4.1. NASA is solely responsible for determining the relative merit of proposals, their selection for award, and judging the value of Phase-I results.

1.4.2 Phase-II. The objective of Phase-II is to continue the R/R&D effort from Phase-I. Only SBCs awarded Phase-I contracts are eligible for Phase-II STTR funding agreements, and only at the Federal Agency which awarded the Phase-I project. The Government is not obligated to fund any specific STTR Phase-II proposal. Funding for each Phase-II contract will be limited to \$500,000. Contractors have up to 24 months to complete the effort and submit their final report.

Phase-II projects are chosen as a result of competitive evaluations based on selection criteria provided in Section 4.2. Phase-II proposals are more comprehensive than those required for Phase-I and are to be prepared in accordance with instructions provided in the Phase-I contract.

1.4.3 Phase-III. NASA may award Phase-III contracts for products or services, with non-STTR funds. Phase-I and Phase-II awards satisfy the requirements of the Competition in Contracting Act for subsequent NASA Phase-III contracting. The small business is also expected to use non-Federal capital to pursue private sector applications of the R/R&D effort.

1.5 Eligibility to Participate in the STTR Program

1.5.1 Small Business Concern/Research Institution. Firms qualifying as SBCs as defined in Section 2.1 of this Solicitation are eligible to participate in the STTR program. Only cooperative research and development proposals as defined in Section 2.4 submitted by the SBC in conjunction with the RI will be considered responsive to this Solicitation. Socially and economically disadvantaged and women-owned SBCs are particularly encouraged to propose.

1.5.2 Place of Performance. For both Phase-I and Phase-II, the R/R&D must be performed in the United States (Section 2.9).

1.5.3 Principal Investigator. The Principal Investigator (PI) is considered key to the success of the effort and must make a substantial commitment to the project. If the PI is not an employee of the SBC, the offeror must describe the management process in the proposal to ensure SBC control of the project.

Functions. The functions of the PI are: planning and directing the STTR project; leading it technically and making substantial personal contributions during its implementation; serving as the primary contact with NASA on the project; and ensuring that the work proceeds according to contract agreements. Competent management of PI functions is essential to project success. The Phase-I proposal shall describe the nature of the PI's activities and the amount of time that the PI will apply personally on the project. The amount of time the PI proposes to spend on the project must be acceptable to the NASA contracting officer.

Qualifications. The qualifications and capabilities of the proposed PI and the basis for PI selection are to be clearly presented in the proposal. NASA has the sole right to accept or reject a substitute PI based on factors such as education, experience, demonstrated ability and competence, and any other evidence related to the specific assignment.

Co-Principal Investigators. Co-PI's are not acceptable.

Misrepresentation or Substitution. Substitution of a PI by the offeror at any time without NASA's advance written approval, or misrepresentation of PI qualifications and eligibility, will result in rejection of the proposal or termination of the contract.

1.6 General Information

1.6.1 Solicitation Distribution. This 2000 STTR Program Solicitation is available via the NASA SBIR/STTR homepage (<http://sbir.nasa.gov>). If the SBC/RI has difficulty accessing the Solicitation, contact the Help Desk (Section 1.6.2).

SBCs and RIs are encouraged to check the SBIR/STTR homepage for program updates. Any updates or corrections to the Solicitation will be posted there.

1.6.2 Means of Contacting NASA STTR Program

1. NASA SBIR/STTR Homepage: <http://sbir.nasa.gov>
2. Each of the NASA field centers has its own homepage including strategic planning and Small Business Innovation Research (SBIR) and STTR information. Please consult these homepages as noted in Section 1.3 for more details on the technology requirements within the topic areas.
3. **Help Desk.** For inquiries, requests, and help-related questions, contact via:

e-mail sttr@reisys.com

telephone (301)-937-0888 between 8:00 a.m. - 5:00 p.m. (Mon.-Fri., Eastern Time)

facsimile (301)-937-0204

The requestor must provide the name and telephone number of the person to contact, the organization name and address, and the specific questions or requests.

4. **NASA SBIR/STTR Program Manager.** Specific information requests that could not be answered by the Help Desk should be mailed to:

Paul Mexcur, Program Manager
 NASA SBIR/STTR Program Management Office
 Code 710, Building 3, Room 108
 Goddard Space Flight Center
 Greenbelt, MD 20771-0001

1.6.3 Questions About This Solicitation. To ensure fairness, questions relating to the intent and/or content of research topics in this Solicitation cannot be answered during the Phase-I Solicitation period. Only questions requesting clarification of proposal instructions and administrative matters will be answered.

1.6.4 Proposal Acknowledgment. An acknowledgment of postal proposal submission will be e-mailed within 15 days of the Solicitation closing date. Information about proposal status will not be available until final selections are announced.

2. Definitions

2.1 Small Business Concern

An SBC is one that, at the time of award of Phase-I and Phase-II funding agreements, meets the following criteria:

1. Is independently owned and operated, is not dominant in the field of operation in which it is proposing, has its principal place of business located in the United States, and is organized for profit;
2. Is at least 51 percent owned, or in the case of a publicly-owned business, at least 51 percent of its voting stock is owned by United States citizens or lawfully admitted permanent resident aliens; and
3. Has, including its affiliates, a number of employees not exceeding 500 and meets the other regulatory requirements found in 13 CFR Part 121. Business concerns, other than investment companies licensed, or state development companies qualifying under the Small Business Investment Act of 1958, 15 U.S.C. 661, et seq., are affiliates of one another when, either directly or indirectly, (1) one concern controls or has the power to control the other or (2) a third party controls or has the power to control both. Control can be exercised through common ownership, common management, and contractual relationships. The terms "affiliates" and "number of employees" are defined in greater detail in 13 CFR 121.

Small business concerns include sole proprietorships, partnerships, corporations, joint ventures, associations, or cooperatives. Eligible joint ventures are limited to no more than 49 percent participation by foreign business entities.

2.2 Research Institution

A U.S. research institution is one that is: (1) a contractor-operated federally funded research and development center, as identified by the National Science Foundation in accordance with the government-wide Federal Acquisition Regulation issued in section 35(c)(1) of the Office of Federal Procurement Policy Act (or any successor legislation thereto), or (2) a non-profit research institution as defined in section 4(5) of the Stevenson-Wydler Technology Innovation Act of 1980, or (3) a non-profit college or university.

2.3 Research or Research and Development (R/R&D)

Any activity that is (1) a systematic, intensive study directed toward greater knowledge or understanding of the subject studied, (2) a systematic study directed specifically toward applying new knowledge to meet a recognized need, or (3) a systematic application of knowledge toward the production of useful materials, devices, systems, or methods, including the design, development, and improvement of prototypes and new processes to meet specific requirements.

2.4 Cooperative Research or Research and Development

For purposes of the NASA STTR Program, cooperative R/R&D is that which is to be conducted jointly by the SBC and the RI in which at least 40 percent of the work (amount requested, including cost sharing if any, less fee if any) is performed by the SBC and at least 30 percent of the work is performed by the RI.

2.5 Subcontract

Any agreement, other than one involving an employer-employee relationship, entered into by a Federal Government contractor calling for supplies or services required solely for the performance of the original funding agreement.

2.6 Socially and Economically Disadvantaged Small Business Concern

A socially and economically disadvantaged SBC is one that is: (1) at least 51 percent owned by (i) an Indian tribe or a native Hawaiian organization or (ii) one or more socially and economically disadvantaged individuals; and (2) whose management and daily business operations are controlled by one or more socially and economically disadvantaged individuals.

2.7 Socially and Economically Disadvantaged Individual

A member of any of the following groups: Black Americans, Hispanic Americans, Native Americans, Asian-Pacific Americans, Subcontinent-Asian Americans, other groups designated from time to time by SBA to be socially disadvantaged, or any other individual found to be socially and economically disadvantaged by SBA pursuant to Section 8(a) of the Small Business Act, 15 U.S.C. 637(a).

2.8 Women-Owned Small Business

A women-owned SBC is one that is at least 51 percent owned by a woman or women who also control and operate it. "Control" in this context means exercising the power to make policy decisions. "Operate" in this context means being actively involved in the day-to-day management.

2.9 United States

Means the 50 states, the territories and possessions of the United States, the Commonwealth of Puerto Rico, the Trust Territory of the Pacific Islands, and the District of Columbia.

2.10 Commercialization

Commercialization is a process of developing markets and producing and delivering products or services for sale (whether by the originating party or by others). As used here, commercialization includes both Government and non-government markets.

3. Proposal Preparation Instructions and Requirements

3.1 Fundamental Considerations

The STTR Phase-I proposal must provide sufficient information to convince NASA that the proposed SBC/RI cooperative effort represents a sound approach for converting technical information resident at the RI into a product or service that meets a need described in a Solicitation research topic. It must also identify the eventual commercial application potential of the product or service and discuss how the SBC would bring it to market.

Multiple Proposal Submissions. An offeror may submit **different** proposals in response to any number of topics, but every proposal must be based on a unique innovation, must be limited in scope to just one topic, and may be submitted only under that topic. *Submitting substantially equivalent proposals to several topics is not permitted and may result in all such proposals being rejected without evaluation.*

End Deliverables. The deliverable item at the end of a Phase-I contract shall be a professional quality report that justifies, validates, and defends the experimental and theoretical work accomplished. Delivery of a product or service with the Phase-I report may be desirable, but it is not a requirement.

Deliverable items for Phase-II contracts shall include products or services in addition to professional quality reports of further developments or applications of the Phase-I results. These deliverables may include prototypes, models, software, or complete products or services. The reported results of Phase-II must address and provide the basis for validating the innovation and the potential for implementation of commercial applications.

Note: As part of the Phase-I and Phase-II deliverables, a non-proprietary technical abstract of findings shall be submitted by the offeror via the SBIR/STTR homepage.

3.2 Phase-I Proposal Requirements

3.2.1 General Requirements:

Page Limitation. A Phase-I STTR proposal shall not exceed a total of 25 standard 8 1/2 x 11 inch (21.6 x 27.9 cm) pages. A page is defined as a single side of a piece of paper. All five proposal items required in Section 3.2.2 will be included within this total. Each page shall be numbered consecutively at the bottom. Margins should be 1.0 inch (2.5 cm). Samples, videotapes, slides, or other ancillary items will not be accepted. Offerors are requested not to use the entire 25-page allowance unless necessary. **Proposals exceeding the 25 page limitation will be rejected during administrative screening.** The program would prefer proposals prepared on both sides of the paper, if possible.

Type Size. No type size smaller than 10 point is to be used for text or tables, except as legends on reduced drawings. Proposals prepared with smaller font sizes will be rejected without consideration.

Brevity and Organization. The proposal should be focused, concise, and organized in accordance with the Solicitation requirements.

Classified Information. NASA does not accept STTR proposals that contain classified information.

3.2.2 Format Requirements. All required items of information must be covered in the proposal. The space allocated to each part of the technical proposal will depend on the project chosen and the offeror's approach.

Each proposal submitted must contain the following in the order presented:

- Proposal Cover (Form 9A), signed in ink, as page 1.
- Proposal Summary (Form 9B), as page 2.
- Technical Proposal (11 Parts), including all graphics, and starting at page 3 with a table of contents.
- Summary Budget (Form 9C), signed in ink.
- Cooperative Agreement.

3.2.3 Proposal Cover and Proposal Summary:

Page 1: Proposal Cover (Form 9A). A copy of the Proposal Cover is provided in Section 9. The offeror shall provide complete information for each item and submit the form as required in Section 6. The proposal project title shall be concise and descriptive of the proposed effort. The title should not use acronyms or words like "Development of" or "Study of." The NASA research topic title must not be used as the proposal title.

Page 2: Proposal Summary (Form 9B). A copy of the Proposal Summary is provided in Section 9. The offeror shall provide complete information for each item and submit Form 9B as required in Section 6. The technical abstract portion is limited to 200 words and shall summarize the implications of the approach and the anticipated results of both Phase-I and Phase-II. Potential commercial applications of the technology should also be presented. If the technical abstract is judged to be non-responsive to the topic, the proposal will be rejected without further evaluation.

Note: Forms 9A and 9B, the Proposal Cover and the Proposal Summary, including the Technical Abstract, are public information and may be disclosed. Do not include proprietary information.

3.2.4 Technical Proposal. This part of the submission shall not contain any budget data and must consist of all eleven parts listed below in the given order and numbered. A proposal omitting any part will be considered non-responsive to this Solicitation and may be rejected during administrative screening. Parts that are not applicable must be noted as "Not Applicable."

Part 1: Table of Contents. Page 3 of the proposal shall begin with a brief table of contents indicating the page numbers of each of the parts of the proposal.

Part 2: Identification and Significance of the Innovation. The first paragraph of Part 2 shall contain (1) a clear and succinct statement of the specific innovation proposed, and why it is an innovation, and (2) a brief explanation of how the innovation is relevant and important to meeting the technology need described in the topic. The initial paragraph shall contain no more than 200 words. In subsequent paragraphs, Part 2 may also include appropriate background and elaboration to explain the proposed innovation.

Part 3: Technical Objectives. State the specific objectives of the Phase-I R/R&D effort including the technical questions that must be answered to determine the feasibility of the proposed innovation.

Part 4: Work Plan. Phase-I R/R&D should address the objectives and questions cited in Part 3. The work plan should indicate what will be done, where it will be done, and how it will be done. The methods planned to achieve each objective or task should be discussed in detail. Schedules, task descriptions and assignments, resource allocations, estimated task hours for each key personnel, and planned accomplishments including project milestones shall be included. The work plan will specifically address the percentage and type of work to be performed by the SBC and the RI. The plan will provide evidence that the SBC will exercise management direction and control of the performance of the STTR effort, including situations in which the Principal Investigator may be an employee of the RI.

Part 5: Related R/R&D. Describe significant current and/or previous R/R&D that is directly related to the proposal including any conducted by the principal investigator or by the offeror. Describe how it relates to the proposed effort and any planned coordination with outside sources. The offeror must persuade reviewers of his or her awareness of key recent R/R&D conducted by others in the specific subject area. At the offeror's option, this section may include concise bibliographic references in support of the proposal if they are confined to activities directly related to the proposed work.

Part 6: Key Personnel and Bibliography of Directly Related Work. Identify key personnel involved in Phase-I activities. Key personnel are the principal investigator and other individuals whose expertise and functions are essential to the success of the project. Provide bibliographic information including directly related education and experience.

This part shall also establish the role of the principal investigator (Section 1.5.3), and indicate the extent to which other proposals recently submitted or planned for submission in 2000 and existing projects commit the time of PI concurrently with this proposed activity.

Part 7: Relationship with Phase-II or Future R/R&D. State the anticipated results of the proposed R/R&D effort if the project is successful (through Phase-I and Phase-II). Discuss the significance of the Phase-I effort in providing a foundation for the Phase-II R/R&D continuation.

Part 8: Company Information and Facilities. Provide adequate information to allow the evaluators to assess the ability of the SBC team to carry out the proposed Phase-I and projected Phase-II and Phase-III activities. The offeror should describe the relevant facilities and equipment currently available, and those to be purchased, to support the proposed activities. NASA will not fund the acquisition of equipment, instrumentation, or facilities under STTR Phase-I contracts as a direct cost (Section 5.17).

The capability of the offeror to perform the proposed activities and bring a resulting product or service to market must be indicated. Qualifications of the offeror and its principals in marketing-related products or services or in raising capital should be presented.

If an offeror proposes the use of unique or one-of-a-kind Government facilities, a statement, describing the uniqueness of the facility and its availability to the offeror at specified times, signed by the appropriate Government official must be included with the proposal. Proposals lacking this signed statement may be rejected without evaluation. If the proposer does not require the use of Government facilities or equipment, the proposer shall so state in this part of the proposal.

Part 9: Subcontracts and Consultants. The SBC/RI team may establish business arrangements with other entities or individuals to participate in performance of the proposed R/R&D effort provided such arrangements do not exceed 30 percent of the work (amount requested including cost sharing if any, less fee, if any). The offeror must describe all subcontracting or other business arrangements, and identify the relevant organizations and/or individuals with whom arrangements are planned. The proposal must include a signed statement by each participating organization or individual that they will be available at the times required for the purposes and extent of effort described in the proposal.

The expertise to be provided by entities other than the SBC and RI must be described in detail, as well as the functions, services, number of hours and labor rates, and their extent of the effort. The proposal must include certifications by each participating organization and individual consultant that they will be available at the times required for the purposes and extent of effort described in the proposal. Subcontractors and consultants work must be performed in the United States.

Part 10: Commercial Applications Potential. The commercial potential of the proposed STTR project is a significant evaluation factor (Section 4.1.2). Therefore, offerors will discuss in this section the broad commercial applications for their project results and plans to bring the technology to commercial application. Offerors should discuss the following:

1. The specific commercial products or services contemplated and the corresponding target market niche;
2. Expected unique competitive advantage of the commercial products or services;
3. Nature of the corresponding contemplated commercial venture;
4. Importance of the contemplated commercial venture to the offeror's current competitive position and to its strategic planning; and
5. The offeror's capability and plans to bring the necessary physical, personnel, and financial resources to bear, in a timely way, to result in a viable commercial venture in the near term subsequent to Phase-II (if awarded).

Part 11: Similar Proposals and Awards. A firm may elect to submit proposals for essentially equivalent work under other federal program solicitations. However, NASA will not fund duplicate proposals for essentially equivalent work under any Government program. The offeror will inform NASA of related proposals and awards and clearly state whether the SBC has submitted currently active proposals for similar work under other Federal

Government program solicitations or intends to submit proposals for such work to other agencies during 2000. For all such cases, the following information is required:

1. The name and address of the agencies to which proposals have been or will be submitted, or from which awards have been received;
2. Dates of such proposal submissions or awards;
3. Title, number, and date of solicitations under which proposals have been or will be submitted or awards received;
4. The specific applicable research topic for each such proposal submitted or award received;
5. Titles of research projects;
6. Name and title of the principal investigator/project manager for each proposal that has been or will be submitted, or from which awards have been received.

Note: All eleven (11) parts must be included. Parts that are not applicable must be included and marked “Not Applicable.”

3.2.5 Proposed Budget:

- 1) **Summary Budget (Form 9C).** The offeror shall complete the Summary Budget, following the instructions provided with the form (Section 9) and include it and any explanation sheets, if needed, as the last page(s) of the proposal. Information shall be submitted to explain the offeror’s plans for use of the requested funds to enable NASA to determine whether the proposed budget is fair and reasonable.
- 2) **Property.** NASA will not fund facility acquisition under Phase-I (Section 5.17). Proposed costs for materials may be included. "Materials" means property that may be incorporated or attached to a deliverable end item or that may be consumed or expended in performing the contract. It includes assemblies, components, parts, raw materials, and small tools that may be consumed in normal use. Any purchase of equipment or products under an STTR contract using NASA funds should be American-made to the extent possible.
- 3) **Travel.** Travel during Phase-I is not normally allowed to prove technical merit and feasibility of the proposed innovation. However, where the offeror deems travel to be essential for these purposes, it is necessary to limit it to one person, one trip to the sponsoring NASA installation. Proposed travel must be described as to purpose and benefits in proving feasibility, and is subject to negotiation and approval by the contracting officer. Trips to conferences are not allowed under the Phase-I contract.
- 4) **Profit.** A profit or fee may be included in the proposed budget as noted in Section 5.12.
- 5) **Cost Sharing.** See Section 5.11.

3.2.6 Cooperative Agreement

The Cooperative Agreement (not to be confused with the Allocation of Rights Agreement) shall be a single page document (see example Model Cooperative Agreement in Section 9) which contains a signed statement to NASA that the SBC, the RI, and any applicable subcontractors and/or consultants participating in performing the proposed R/R&D effort have agreed to cooperate on the proposed project, if and when the project is selected for funding.

3.3 Phase-II Proposal Requirements

The Phase-I contract will serve as a request for proposal (RFP) for the Phase-II follow-on project. Phase-II proposals are more comprehensive than those required for Phase-I. Submission of a Phase-II proposal is strictly voluntary and NASA assumes no responsibility for any proposal preparation expenses. The Cooperative Research established with a specific RI in Phase I shall continue with the same RI in Phase II.

Proposal Contents. Proposals shall be prepared in the following order. Failure to include any requested information in the proposal may make it non-responsive to the RFP. The proposal shall not contain any budget data and must

consist of all 13 parts numbered and in following order. A proposal omitting any part will be considered non-responsive to this Solicitation and may be rejected during administrative screening.

Part 1: Proposal Cover. (Form provided by awarding Center)

Part 2: Proposal Summary. (Form provided by awarding Center)

Part 3: Table of Contents.

Part 4: Results of the Phase-I Project. Briefly describe how Phase-I has proven the feasibility of the innovation, provided a rationale for both NASA and commercial applications, and demonstrated the ability of the offeror to conduct R/R&D.

Part 5: Technical Objectives, Approach and Work Plan. Define the specific objectives of the Phase-II research and technical approach; and provide a work plan defining specific tasks, performance schedules, milestones, and deliverables.

Part 6: Company Information. Describe the capability of the firm to carry out Phase-II and Phase-III activities including its organization, operations, number of employees, R/R&D capabilities, and experience relevant to the work proposed.

Part 7: Facilities and Equipment. This section shall provide adequate information to allow the evaluators to assess the ability of the SBC to carry out the proposed Phase-II activities. The offeror should describe the relevant facilities and equipment currently available, and those to be purchased, to support the proposed activities. NASA will not fund the acquisition of equipment, instrumentation, or facilities under STTR Phase-II contracts as a direct cost (Section 5.17).

If an offeror proposes the use of unique or one-of-a-kind Government facilities, a statement, describing the uniqueness of the facility and its availability to the offeror at specified times, signed by the appropriate Government official must be included with the proposal. Proposals lacking this signed statement may be rejected without evaluation.

If the proposal does not require the use of Government facilities or equipment, the offeror shall so state in this part of the proposal.

Part 8: Key Personnel. Identify the key personnel for the project, confirm their availability for Phase-II, and discuss their qualifications in terms of education, work experience, and accomplishments relevant to the project.

Part 9: Subcontracts and Consultants. Describe in detail any subcontract, consultant, or other business arrangements involving participation in performance of the proposed R/R&D effort and provide written evidence of their availability for the project. For Phase-II, a minimum of 40 percent of the work must be performed by the proposing SBC and 30 percent by the RI unless approved in writing by the Contracting Officer. The proposal must include a commitment from each subcontractor and/or consultant that they will be available at the times required for the purposes and extent of effort described in the proposal. Subcontractors and consultants work must be performed in the United States.

Part 10: Commercialization and Phase-III Plans. Describe plans for commercialization (Phase-III) in terms of each of the following areas:

(1) Product or Service Commercial Feasibility: Provide a description of the (a) contemplated commercial product and/or service, the corresponding commercial venture, and the unique competitive advantage of both; and (b) technical obstacles to commercial applications, as well as plans to address them.

(2) Market Feasibility and Competition: Describe: (a) the target market niche including the distinction between U.S. Government and other markets; (b) estimated potential market size in terms of revenues to be

realized by the offer from U.S. Government markets and, separately, from other markets; (c) competitive environment in terms of present and likely competing similar and alternative technologies, and corresponding competing domestic and foreign entities; (d) significant developments within the targeted business sector; and (e) offeror's ability, if any, to protect relevant technology with patents or rights to exclusive access.

(3) Strategic Relevance to the Offeror: Describe the relevance of the targeted commercial venture to the offeror's: (a) current business segments; (b) relative position with respect to its competitors; and (c) strategic planning for the next 5 years.

(4) Key Management, Technical Personnel and Organizational Structure: Describe: (a) the skills and experience of key management and technical personnel relevant to bringing innovative technology to commercial application, (b) current organizational structure, and (c) plans and timeline for obtaining the balance of all necessary key business development expertise and other staffing requirements.

(5) Production and Operations: Describe: (a) business development progress to date regarding the contemplated commercial venture; (b) obstacles, plans, and associated milestones regarding all key business development elements; and (c) sources and components of private physical resources committed to date and plans for obtaining the balance of the necessary physical resources.

(6) Financial Planning: Describe: (a) the amounts and sources of private financial resources expended and committed to date with respect to the technology development project, and with respect to business development of the targeted commercial venture; (b) significant requirements of potential investors, creditors, and insurers of the venture; (c) proforma statement of cash flow with respect to the targeted commercial venture that includes best estimates of at least the following major components and timing thereof: capital investment, revenues, principal and interest payments, depreciation of relevant assets, other operating expenses; and (d) evidence of the offeror's current financial strength (audited or unaudited financial statements may be appended to address this).

Part 11: Capital Commitments Supporting Phase-II and Phase-III. Describe and document capital commitments from non-STTR sources or from internal funds for pursuit of Phase-II and Phase-III. Offerors for Phase-II contracts are strongly urged to obtain valid non-STTR funding support commitments for follow-on Phase-III activities and additional support of Phase-II from parties other than the proposing firm. Valid funding support commitments must provide that a specific, substantial amount will be made available to the firm to pursue the stated Phase-II and/or Phase-III objectives. They must indicate the source, date, and conditions or contingencies under which the funds will be made available. Alternatively, self-commitments of the same type and magnitude that are required from outside sources can be considered. If Phase-III will be funded internally, offerors should describe their financial position.

Evidence of funding support commitments from outside parties must be provided in writing to the proposing entity and should accompany the Phase-II proposal. Letters of commitment should specify available funding commitments, other resources to be provided, and any contingent conditions. Expressions of technical interest by such parties in the Phase-II research or of potential future financial support are insufficient and will not be accepted as support commitments by NASA.

Part 12: Related R/R&D. Describe R/R&D related to the proposed work and affirm that the proposed objectives have not already been achieved and that the same development is not presently being pursued elsewhere under contract to the Government.

Part 13: Proposal Pricing. Special instructions for pricing the Phase-II proposal will be presented in the Phase-I contract and may be provided by the contracting officer.

4. Method of Selection and Evaluation Criteria

4.1 Phase-I Proposals

Proposals judged to be responsive to the administrative requirements of this Solicitation and having a reasonable potential of meeting a NASA need, as evidenced by the technical abstract included in the Proposal Summary (Form 9B), will be evaluated on a competitive basis.

4.1.1 Evaluation Process. Proposals should provide all information needed for complete evaluation and evaluators are not expected to seek additional information. Evaluations will be performed by NASA scientists and engineers and by qualified experts outside of NASA (including industry, academia, and other Government agencies) as required to determine or verify the merit of a proposal. Offerors should not assume that evaluators are acquainted with the firm, key individuals, or with any experiments or other information. Any pertinent references or publications should be noted in Part 5 of the technical proposal.

4.1.2 Phase-I Evaluation Criteria. NASA will give primary consideration to the scientific and technical merit and feasibility of the proposal and its benefit to NASA. Each proposal will be judged and scored on its own merits using the factors described below:

Factor 1. Scientific/Technical Merit and Feasibility

The proposed R/R&D effort will be evaluated on whether it offers a clearly innovative and feasible technical approach to the NASA problem area described in the topic. Specific objectives, approaches and plans for developing and verifying the innovation must demonstrate a clear understanding of the problem and the current state-of-the-art. The degree of understanding and significance of the risks involved in the proposed innovation must be presented.

Factor 2. Experience, Qualifications and Facilities

The technical capabilities and experience of the principal investigator or project manager, key personnel, staff, consultants and subcontractors, if any, are evaluated for consistency with the research effort and their degree of commitment and availability. The necessary instrumentation or facilities required must be shown to be adequate and any reliance on external sources, such as Government Furnished Equipment or Facilities, addressed (Section 5.17).

Factor 3. Effectiveness of the Proposed Work Plan

The clear delineation of the responsibilities of the SBC and RI for the success of the proposed cooperative R/R&D effort will be evaluated. The joint work plan will be reviewed for its comprehensiveness, effective use of available resources, cost management and proposed schedule for meeting the Phase-I objectives. The methods planned to achieve each objective or task should be discussed in detail. The offeror must demonstrate the ability to organize for effective conversion of intellectual property into products or services of value to NASA and commercial marketplace.

Factor 4. Commercial Merit and Feasibility

The proposal will be evaluated for any potential commercial applications in the private sector or for use by the Federal Government.

Scoring of Factors and Weighting: Factors 1, 2 and 3 will be scored numerically with Factor 1 worth 50 percent and Factors 2 and 3 each worth 25 percent. The sum of the scores for Factors 1, 2, and 3 will comprise the Technical Merit score. The score for Commercial Merit will be in the form of an adjectival rating (Excellent, Very Good, Average, Below Average, Poor, Insufficient Data). For Phase 1 proposals, Technical Merit carries more weight than Commercial Merit.

4.1.3 Selection. After a proposal is reviewed based on the stated evaluation criteria, it will be ranked relative to all other proposals. Selection decisions will consider the recommendations from all Centers, Strategic Enterprises,

overall NASA priorities, and program balance. The STTR Source Selection Official has the final authority for choosing the specific proposals for contract negotiation.

Firms selected for negotiations that may lead to an award will be notified by e-mail. The list of selections will be announced in a NASA press release and will also be posted on the NASA SBIR/STTR web site (<http://sbir.nasa.gov>). Selected firms will receive a formal notification letter that identifies the Contracting Officer at the NASA Center responsible for negotiating the Phase-I contract.

4.1.4 Allocation of Rights Agreement. After being selected for Phase-I contract negotiations, but before the contract starts, the offeror shall, if requested, provide to the Contracting Officer at the managing NASA Center, a completed **Allocation of Rights Agreement (ARA)**, which has been signed by authorized representatives of the SBC, RI and subcontractors and consultants, as applicable. The ARA shall state the allocation of intellectual property rights with respect to the proposed STTR activity and planned follow-on research, development and/or commercialization.

4.2 Phase-II Proposals

4.2.1 Evaluation Process. The Phase-II evaluation process is similar to the Phase-I process. Each proposal will be reviewed by NASA scientists and engineers and by qualified experts outside of NASA as needed. In addition, those proposals with high technical merit will be reviewed for commercial merit. NASA uses a peer review panel to evaluate commercial merit. Panel membership will include non-NASA personnel experts in business development and technology commercialization.

4.2.2 Evaluation Factors. The evaluation of Phase-II proposals under this Solicitation will apply the following factors:

Factor 1. Scientific/Technical Merit and Feasibility

The proposed R/R&D effort will be evaluated on its innovativeness, originality, and technical payoff potential if successful, including the degree to which Phase-I objectives were met, the feasibility of the innovation, and whether the Phase-I results indicate a Phase-II project is appropriate.

Factor 2. Future Importance and Value to NASA

The eventual value of the product, process, or technology results to the NASA mission will be assessed.

Factor 3. Capability of the Small Business Concern

NASA will assess the capability of the SBC to conduct Phase-II based on (a) the validity of the project plans for achieving the stated goals; (b) the qualifications and ability of the project team (Principal Investigator/Project Manager, company staff, consultants and subcontractors) relative to the proposed research; and (c) the availability of any required equipment and facilities.

Factor 4. Commercial Potential. Consideration will be given to the following:

(1) Commercial potential of the technology: This includes an assessment of the offeror's ability to demonstrate: (a) a specific, well-defined commercial product or service based on the technology to be developed; (b) a realistic target market niche of sufficient size; (c) that the targeted commercial product or service has strong potential for uniquely meeting a well-defined need within the target market niche; and (d) a commitment of significant private financial, physical, and technical personnel resources.

(2) Demonstrated commercial intent of the offeror: This includes an assessment of: (a) the importance of the targeted commercial venture to the offeror's current business and strategic planning; (b) a targeted commercial venture that does not rely on continued U.S. Government markets; and (c) the adequacy of all resource commitments for Phase-III development of the technology to a state of readiness for commercial application.

(3) Capability of the offeror to bring successfully developed technology to commercial application: This includes assessment of the offeror's ability to demonstrate: (a) the offeror's past success in bringing STTR and other innovative technologies to commercial application; (b) well-thought-out business planning; (c) strong likelihood of the offeror's bringing the remaining necessary private financial, physical, personnel and other resources to bear in a timely way to achieve commercial application of the technology in the not too distant term subsequent to Phase-II; and (d) the strength of the current and continued financial viability of the offeror.

In applying these commercial criteria, NASA will assess proposal information in terms of credibility, objectivity, reasonableness of key assumptions, independent corroborating evidence, internal consistency, demonstrated awareness of key risk areas and critical business vulnerabilities, and other indicators of sound business analysis and judgment.

4.2.3 Evaluation and Selection. Factors 1, 2, and 3 will be scored numerically with Factor 1 worth 50 percent and Factors 2 and 3 each worth 25 percent. The sum of the scores for Factors 1, 2, and 3 will comprise the Technical Merit score. Proposals receiving high numerical scores will be evaluated and rated for their commercial potential using the criteria listed in Factor 4 and by applying the same adjectival ratings as set forth for Phase-I proposals.

Each NASA Installation managing Phase-I projects will use these factors to evaluate the Phase-II proposals it receives that are responsive to the Phase-II RFP. Final selections will be based on recommendations from all Installations and Strategic Enterprises; assessments of project value to NASA's overall programs and plans; and any other evaluations or assessments (particularly of commercial potential) that may become available to the Source Selection Official.

4.3 Debriefing of Unsuccessful Offerors

After Phase-I and Phase-II selection decisions have been announced, debriefings for unsuccessful proposals will be available to the offeror's corporate official or designee via e-mail. Telephone requests for debriefings will not be accepted. Debriefings are not opportunities to reopen selection decisions. They are intended to acquaint the offeror with perceived strengths and weaknesses of the proposal and perhaps identify constructive future action by the offeror.

Debriefings will not disclose the identity of the proposal evaluators nor provide proposal scores, rankings in the competition, or the content of, or comparisons with other proposals.

4.3.1 Phase-I Debriefings. For Phase-I proposals, any request for a debriefing must be made via e-mail to sttr@reisys.com, within 60 days after the selection announcement. Late requests will not be honored.

4.3.2 Phase-II Debriefings. To request debriefings on Phase-II proposals, offerors must request via e-mail to the Procurement Point of Contact at the appropriate NASA Center (not the SBIR/STTR Program Manager) within 60 days after selection announcement. Late requests will not be honored.

5. Considerations

5.1 Awards

5.1.1 Availability of Funds. Both Phase-I and Phase-II awards are subject to availability of funds. NASA has no obligation to make any specific number of Phase-I or Phase-II awards based on this Solicitation, and may elect to make several or no awards in any specific technical topic.

NASA plans to announce the selection of approximately 20 proposals resulting from this Solicitation, for negotiation of Phase-I contracts with values not exceeding \$100,000. Following contract negotiations and awards, Phase-I contractors will have up to 12 months to carry out their programs, prepare their final reports, and submit Phase-II proposals. NASA intends that all Phase-I projects selected will be placed under contract by mid-October 2000.

NASA anticipates that approximately 35 percent of the successfully completed Phase-I projects from the STTR 2000 Solicitation will be selected for Phase-II. Phase-II agreements are fixed-price contracts with performance periods not exceeding 24 months and funding not exceeding \$500,000.

5.1.2 Contracting. Fixed-price contracts will be issued for Phase-I. Simplified contract documentation is employed. SBCs selected for negotiation of contract awards can reduce processing time by examining the procurement documents, furnishing the contracting officer with signed representations and certifications, and indicating any contract terms to be negotiated or agreement with the contract terms. NASA will make the Phase-I model contract and other documents available to the public on the NASA SBIR/STTR homepage (<http://sbir.nasa.gov>) at the time of selection announcement. **From the time of proposal selection until the award of a contract, only the Contracting Officer is authorized to commit the Government, and all communications must be through the Contracting Officer.**

NASA is not responsible for any monies expended by the offeror before award of any contract resulting from this Solicitation.

5.2 Phase-I Reporting

An interim progress report is required when the invoice is submitted at project mid-point in accordance with the payment schedule (Section 5.3). This report shall document progress made on the project and activities required for completion to provide NASA the basis for determining whether the payment is warranted.

A final report must be submitted to NASA upon completion of the Phase-I R/R&D effort in accordance with contract provisions. It shall elaborate the project objectives, work carried out, results obtained, and assessments of technical merit and feasibility. The final report shall include a single page proposal summary as the first page, in a format provided in the Phase-I contract, identifying the purpose of the R/R&D effort and describing the findings and results, including the degree to which the Phase-I objectives were achieved, and whether the results justify Phase-II continuation. The potential applications of the project results in Phase-III either for NASA or commercial purposes shall also be described. The proposal summary is to be submitted without restriction for NASA publication.

5.3 Payment Schedule for Phase-I

Payments can be authorized as follows: one-third at the time of award, one-third at project mid-point after award, and the remainder upon acceptance of the final report by NASA. The first two payments will be made 30 days after receipt of valid invoices. The final payment will be made 30 days after acceptance of the final report and other deliverables as required by the contract. Electronic funds transfer will be employed and offerors will be required to submit account data if selected for contract negotiations.

5.4 Proprietary Information

It is NASA's policy to use information (data) included in proposals for evaluation purposes only. Public release of information in any proposal submitted will be subject to existing statutory and regulatory requirements. If information consisting of a trade secret, proprietary commercial or financial information, or private personal information is provided in an STTR proposal, NASA will treat in confidence the proprietary information provided the following legend appears on the title page of the proposal:

"For any purpose other than to evaluate the proposal, this data shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed in whole or in part, provided that if a funding agreement is awarded to the offeror as a result of or in connection with the submission of this data, the Government shall have the right to duplicate, use or disclose the data to the extent provided in the funding agreement. This restriction does not limit the Government's right to use information contained in the data if it is obtained from another source without restriction. The data subject to this restriction are contained in pages _____ of this proposal."

Do not label the entire proposal proprietary. The Proposal Summary (Form 9B) should not contain proprietary information.

5.5 Non-NASA Reviewers

In addition to Government personnel, NASA at its discretion and in accordance with 18-15.413-2 of the NASA FAR Supplement, may utilize qualified individuals from outside the Government in the proposal review process. Any decision to obtain an outside evaluation shall take into consideration requirements for the avoidance of organizational or personal conflicts of interest and the competitive relationship, if any, between the prospective contractor or subcontractor(s) and the prospective outside evaluator. Any such evaluation will be under agreement with the evaluator that the information (data) contained in the proposal will be used only for evaluation purposes and will not be further disclosed.

5.6 Release of Proposal Information

In submitting a proposal, the offeror agrees to permit the Government to disclose publicly the information contained on the Proposal Cover (Form 9A) and the Proposal Summary (Form 9B). Other proposal information (data) is considered to be the property of the offeror, and NASA will protect it from public disclosure to the extent permitted by law.

5.7 Final Disposition of Proposals

The Government retains ownership of proposals accepted for evaluation, and such proposals will not be returned to the offeror. Copies of all evaluated Phase-I proposals will be retained for one year after the Phase-I selections have been made, after which time unsuccessful proposals will be destroyed. Successful proposals will be retained in accordance with contract file regulations.

5.8 Rights in Data Developed Under STTR Contracts

Rights to data used in, or first produced under, any Phase-I or Phase-II contract are specified in the clause at FAR 52.227-20, Rights in Data--STTR Program. The clause provides for rights consistent with the following:

5.8.1. Non-Proprietary Data. Some data of a general nature are to be furnished to NASA without restriction (i.e., with unlimited rights) and may be published by NASA. These data will normally be limited to the project summaries accompanying any periodic progress reports and the final reports required to be submitted. The requirement will be specifically set forth in any contract resulting from this Solicitation.

5.8.2 Proprietary Data. When data that is required to be delivered under an STTR contract qualifies as "proprietary," i.e., either data developed at private expense that embody trade secrets or are commercial or financial and confidential or privileged, or computer software developed at private expense that is a trade secret, the contractor, if the contractor desires to continue protection of such proprietary data, shall not deliver such data to the Government, but instead shall deliver form, fit, and function data.

5.8.3 Non-Disclosure Period. The Government, for a period of 4 years from acceptance of all items to be delivered under an STTR contract, shall use STTR data, i.e., data first produced by the contractor in performance of the contract, where such data are not generally known, and which data without obligation as to its confidentiality have not been made available to others by the contractor or are not already available to the Government, agrees to use these data for Government purposes. These data shall not be disclosed outside the Government (including disclosure for procurement purposes) during the 4-year period without permission of the contractor, except that such data may be disclosed for use by support contractors under an obligation of confidentiality. After the 4-year period, the Government has a royalty-free license to use, and to authorize others to use on its behalf, these data for Government purposes, but the Government is relieved of all disclosure prohibitions and assumes no liability for unauthorized use by third parties.

5.9 Copyrights

Subject to certain licenses granted by the contractor to the Government, the contractor receives copyright to any data first produced by the contractor in the performance of an STTR contract.

5.10 Patents

The contractor may normally elect title to any inventions made in the performance of an STTR contract. The Government receives a nonexclusive license to practice or have practiced for or on behalf of the Government each such invention throughout the world. To the extent authorized by 35 U.S.C. 205, the Government will not make public any information disclosing such inventions for a reasonable time to allow the contractor to file a patent application.

5.11 Cost Sharing

Cost sharing is permitted, but not required for proposals under this Solicitation. Cost sharing, if included, should be shown in the summary budget but not in items labeled "AMOUNT REQUESTED." **If cost sharing is proposed, then these added funds shall be included in the 40/30 work percentage distribution and reflected in the Summary Budget (Form 9C).** No profit will be paid on the cost-sharing portion of the contract

5.12 Profit or Fee

Both Phase-I and Phase-II STTR contracts may include a reasonable profit. The reasonableness of proposed profit is determined by the Contracting Officer during contract negotiations.

5.13 Joint Ventures and Limited Partnerships

Both joint ventures and limited partnerships are permitted, provided the entity created qualifies as a SBC in accordance with the definition in Section 2.1. A statement of how the workload will be distributed, managed, and charged should be included in the proposal. A copy or comprehensive summary of the joint venture agreement or partnership agreement should be appended to the proposal. This will not count as part of the 25 page limit for the Phase-I proposal.

5.14 Similar Awards and Prior Work

If an award is made pursuant to a proposal submitted under this Program Solicitation, the firm will be required to certify that it has not previously been paid nor is currently being paid for essentially equivalent work by any agency of the Federal Government. Failure to acknowledge or report similar or duplicate efforts can lead to the termination of contracts or other actions.

5.15 Contractor Commitments

Upon award of a contract, the contractor will be required to make certain legal commitments through acceptance of numerous clauses in the Phase-I contract. The outline that follows illustrates the types of clauses that will be included. This is not a complete list of clauses to be included in Phase-I contracts, nor does it contain specific wording of these clauses. Copies of complete provisions will be made available prior to contract negotiations.

5.15.1 Standards of Work. Work performed under the contract must conform to high professional standards. Analyses, equipment, and components for use by NASA will require special consideration to satisfy the stringent safety and reliability requirements imposed in aerospace applications.

5.15.2 Inspection. Work performed under the contract is subject to Government inspection and evaluation at all reasonable times.

5.15.3 Examination of Records. The Comptroller General (or a duly authorized representative) shall have the right to examine any directly pertinent records of the contractor involving transactions related to the contract.

5.15.4 Default. The Government may terminate the contract if the contractor fails to perform the contracted work.

5.15.5 Termination for Convenience. The contract may be terminated by the Government at any time if it deems termination to be in its best interest, in which case the contractor will be compensated for work performed and for reasonable termination costs.

5.15.6 Disputes. Any dispute concerning the contract that cannot be resolved by mutual agreement shall be decided by the contracting officer with right of appeal.

5.15.7 Contract Work Hours. The contractor may not require a non-exempt employee to work more than 40 hours in a work week unless the employee is paid for overtime.

5.15.8 Equal Opportunity. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, age, sex, or national origin.

5.15.9 Affirmative Action for Veterans. The contractor will not discriminate against any employee or applicant for employment because he or she is a disabled veteran or veteran of the Vietnam era.

5.15.10 Affirmative Action for Handicapped. The contractor will not discriminate against any employee or applicant for employment because he or she is physically or mentally handicapped.

5.15.11 Officials Not to Benefit. No member of or delegate to Congress shall benefit from the STTR contract.

5.15.12 Covenant Against Contingent Fees. No person or agency has been employed to solicit or to secure the contract upon an understanding for compensation except bona fide employees or commercial agencies maintained by the contractor for the purpose of securing business.

5.15.13 Gratuities. The contract may be terminated by the Government if any gratuities have been offered to any representative of the Government to secure the contract.

5.15.14 Patent Infringement. The contractor shall report to NASA each notice or claim of patent infringement based on the performance of the contract.

5.15.15 American-Made Equipment and Products. Equipment or products purchased under an STTR contract must be American-made whenever possible.

5.16 Additional Information

5.16.1 Precedence of Contract Over Solicitation. This Program Solicitation reflects current planning. If there is any inconsistency between the information contained herein and the terms of any resulting STTR contract, the terms of the contract are controlling.

5.16.2 Evidence of Contractor Responsibility. Before award of an STTR contract, the Government may request the offeror to submit certain organizational, management, personnel, and financial information to establish responsibility of the offeror. Contractor responsibility includes all resources required for contractor performance, i.e., financial capability, work force, and facilities.

5.17 Property

In accordance with the Federal Acquisition Regulations (FAR) Part 45, it is NASA's policy not to provide facilities (capital equipment, tooling, test and computer facilities, etc.) for the performance of work under contract. An SBC will furnish its own facilities to perform the proposed work as an indirect cost to the contract. Special tooling required for a project may be allowed as a direct cost.

When an SBC cannot furnish its own facilities to perform required tasks, an SBC may propose to acquire the use of commercially available facilities. Rental or lease costs may be considered as direct costs as part of the total funding for the project. If unique requirements force an offeror to acquire facilities under a NASA contract, they will be purchased as Government Furnished Equipment (GFE) and titled to the Government.

An offeror may propose the use of unique or one-of-a-kind NASA facilities if essential for the research. Offerors requiring a NASA facility must clearly document and certify that there is no commercially available facility to perform the R&D. It may be difficult, however, to ensure availability, and non-availability may lead to non-selection. Should an offeror propose the use of unique or one-of-a-kind NASA facilities essential for the R/R&D, an agreement with the

responsible installation is required and costs for their use will be determined by the installation. These costs may be chargeable in accordance with the Government property clause of the contract. Total contract costs must not exceed the Phase-I and Phase-II funding limits given in this Solicitation (Section 5.1).

6. Submission of Proposals

6.1 The Submission Process

6.1.1 Submission Requirements. NASA utilizes an electronic process for management of the STTR program. This management approach requires that a proposing firm have Internet access via the World Wide Web, and an e-mail address.

6.1.2 What Needs to Be Submitted. A proposal submission is comprised of two parts:

1. **Internet Submission.** The entire proposal including Forms 9A, 9B and 9C must be submitted via the Internet. (<http://sbir.nasa.gov>)
2. **Postal Submission.** Postal submission includes an original signed proposal with all forms plus three copies.

Firms not able to obtain Internet access must request an exemption by calling 301-286-5661 or 301-937-0888 by Wednesday, April 26, 2000.

Note: Other forms of submissions such as facsimile or e-mail attachment are not acceptable.

6.2 Internet Submission

6.2.1 Electronic Technical Proposal Preparation. The term “Technical Proposal” refers to the part of the submission as described in Section 3.2.4.

Word Processor. NASA converts all technical proposal files to PDF format for evaluation purposes. Therefore, NASA requests that technical proposals be submitted in PDF format, and encourages companies to do so. Other acceptable formats for PC are AmiPro, ClarisWorks for Windows, MS Works, Text, MS Word, WordPerfect, Postscript, and Adobe Acrobat. For Macintosh, the acceptable formats are ClarisWorks, MS Works, MacWrite Pro, Text, MS Word, WordPerfect, Postscript, and Adobe Acrobat. Unix and TeX users please note that due to PDF difficulties with non-standard fonts, please output technical proposal files in DVI format.

Graphics. The offeror is encouraged for reasons of space conservation and simplicity, but not required, to embed graphics within the word processed document. For graphics submitted as separate files, the acceptable file formats (and their respective extensions) are: Bit-Mapped (.bmp), Graphics Interchange Format (.gif), JPEG (.jpg), PC Paintbrush (.pcx), WordPerfect Graphic (.wpg), and Tagged-Image Format (.tif).

Limitations. While only the paper copy will be screened for administrative compliance, the various files comprising the electronic version are required to exactly reflect the paper version.

Virus Check. The offeror is responsible for performing a virus check on each submitted technical proposal. As a standard part of entering the proposal into the processing system, NASA will scan each submitted electronic technical proposal for viruses. **The detection, by NASA, of a virus on any submitted electronic technical proposal, may cause rejection of the proposal.**

6.2.2 Electronic Handbook. An Electronic Handbook for submitting proposals via the internet is hosted on the NASA SBIR/STTR Homepage (<http://sbir.nasa.gov>). The handbook will electronically guide the firms through the various steps required for submitting an STTR proposal and issue secure-user identification and passwords for each

submission. Communication between NASA and the firm will be via a combination of electronic handbooks and e-mail.

Important: After the offeror has submitted Forms 9A, 9B, and 9C via the Internet, the offeror should use the handbook to print the three forms locally. These forms must be signed as appropriate and included in the postal submission.

6.3 Postal Submission

Postal Submissions are comprised of:

1. One original signed paper copy of the proposal, including paper copies of all original forms (as stated in Section 3.2.2)
2. Three additional paper copies of the entire proposal. Each proposal copy is to be stapled separately.

6.3.1 Physical Packaging Requirements for Paper Copies of Proposal. Do not use bindings or special covers. Staple the pages of each copy of the proposal in the upper left-hand corner only. Secure packaging is mandatory. NASA cannot process proposals damaged in transit. All items for any proposal must be sent in the same envelope. If more than one proposal is being submitted, each proposal must be in its own envelope, but all proposals may be sent in the same package. Do not send duplicate packages of any proposal as "insurance" that at least one will be received.

A checklist is included in this Solicitation to assist the offeror in submitting a complete proposal. The checklist should not be submitted with the proposal.

6.3.2 Where to Send Proposals. All proposals that are mailed through the U.S. Postal Service first class, registered, or certified mail; proposals sent by express mail or commercial delivery services; or hand-carried proposals **must be** delivered to the following address between 8:00 a.m. and 5:00 p.m. EDT:

NASA SBIR/STTR Program Support Office
 REI Systems, Inc
 4041 Powder Mill Road
 Suite 311
 Calverton, MD 20705-3106

The telephone number 301-937-0888 may be used when required for reference by delivery services:

6.3.3 Deadline for Proposal Receipt. All proposal submissions (both internet and postal) must be received no later than 5:00 p.m. EDT on Wednesday, May 10, 2000 at the NASA SBIR/STTR Program Support Office. Any proposal received after that date and time shall be considered late and handled accordingly.

Note: The server/electronic handbook will not be available for internet submissions after 5:00 p.m. EDT on Wednesday, May 10, 2000.

6.4 Acknowledgment of Proposal Receipt

NASA will acknowledge receipt of proposals to the SBC Official's e-mail address as provided on the proposal cover sheet. If a proposal acknowledgment is not received within 15 days following the closing date of this Solicitation, the offeror should call NASA SBIR/STTR Program Support Office at 301-937-0888.

6.5 Withdrawal of Proposals

Proposals may be withdrawn by written notice, signed by the designated SBC Official. Withdrawal notice must include proposal number and title.

7. Scientific and Technical Information Sources

7.1 NASA SBIR/STTR Homepage

Detailed information on NASA's STTR Program is available at: <http://sbir.nasa.gov>.

7.2 NASA Commercial Technology Network

The NASA Commercial Technology Network (NCTN) contains a significant amount of on-line information about the NASA Commercial Technology Program. The address for the NCTN homepage is: <http://nctn.hq.nasa.gov/>

7.3 NASA Technology Utilization Services

The **National Technology Transfer Center (NTTC)**, sponsored by NASA in cooperation with other Federal agencies, serves as a national resource for technology transfer and commercialization. NTTC has a primary role to get Government research into the hands of U.S. businesses. Its gateway services make it easy to access databases and to contact experts in your area of research and development. For further information, call 800-678-6882.

NASA's network of **Regional Technology Transfer Centers (RTTCs)** provides business planning and development services. However, NASA does not accept responsibility for any services these centers may offer in the preparation of proposals. RTTCs can be contacted directly as listed below to determine what services are available and to discuss fees charged. Alternatively, to contact any RTTC call 800-472-6785.

Northeast:

Center for Technology Commercialization
Massachusetts Technology Park
1400 Computer Drive
Westboro, MA 01581-5054
Phone: 508-870-0042
URL: <http://www.ctc.org>

Mid-Atlantic:

Mid-Atlantic Technology Applications Center
University of Pittsburgh
3400 Forbes Avenue, 5th Floor
Pittsburgh, PA 15260
Phone: 412-383-2500
URL: <http://www.mtac.pitt.edu/WWW/>

Southeast:

Southern Technology Applications Center
University of Florida, College of Engineering
1900 SW 34th Street, Suite 206
Gainesville, FL 32608-1260
Phone: 352-294-7822
URL: <http://www.state.fl.us/stac>

Mid-West:

Great Lakes Industrial Technology Center
Battelle Memorial Institute
25000 Great Northern Corporate Center, Suite 450
Cleveland, OH 44070-5310
Phone: 440-734-0094
URL: <http://www.battelle.org/glitec>

Mid-Continent:

Mid-Continent Technology Transfer Center
Texas Engineering Extension Service
Technology & Economic Development Division
College Station, TX 77843-8000
Phone: 409-845-2913
URL: <http://www.mcttc.com/>

Far-West:

Far-West Technology Transfer Center
University of Southern California
3716 South Hope Street, Suite 200
Los Angeles, CA 90007-4344
Phone: 800-642-2872
URL: <http://www.usc.edu/dept/engineering/TTC/NASA>

7.4 United States Small Business Administration

The Policy Directives for the STTR Program, which also state the SBA policy for this Solicitation, may be obtained from the following source. SBA information can also be obtained at: <http://www.sba.gov/>.

Office of Innovation, Research and Technology
U.S. Small Business Administration
409 Third Street, S.W.
Washington, D.C. 20416
Phone: 202-205-7701

7.5 National Technical Information Service

The **National Technical Information Service**, an agency of the Department of Commerce, is the Federal Government's central clearinghouse for publicly funded scientific and technical information. For information about their various services and fees, call or write:

National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161
Phone: 800-553-6847
URL: <http://ntis.gov>

8. Research Topics

To reduce overlap and streamline administrative and programmatic functions, NASA has established areas of excellence for each of its field installations. The most significant, as noted in NASA's management plan, are termed Centers of Excellence (CE). There is one CE for each NASA installation. Each CE represents a focused, Agency-wide leadership responsibility in a specific area of technology or knowledge. CE's are chartered with a clear definition of their capabilities and boundaries. They are charged to be preeminent within the Agency, if not worldwide, with respect to the human resources, facilities, and other critical capabilities associated with the particular area of excellence. Each CE must maintain or increase the Agency's preeminent position in their assigned area in line with the program requirements of the Strategic Enterprises and the long-term interests of the Agency. More information can be found in the NASA Strategic Plan:

<http://www.hq.nasa.gov/office/codez/plans.html>

The NASA STTR Program is aligned with the CE's. This year five CE's are participating. The research topics will be focused on some of the product areas or challenges faced by each CE. Research topics will rotate each year among different CE's.

Topic 1: Information Technology

NASA Installation: **Ames Research Center**

<http://www.arc.nasa.gov>

This NASA Center of Excellence is based on three cornerstones: Automated Reasoning for Autonomous Systems, Human-Centered Computing, and High Performance Computing & Networking. For this Solicitation, the focus is on software tools and methods for the first two cornerstones. The target domains for these capabilities should be of high relevance to NASA. Primary areas of interest are as follows:

Technologies for Autonomous Spacecraft, Rovers, and Other Complex Systems

- On-Board capabilities for synthesizing operational plans from high-level goals, rather than from low-level sequences of actions sent by a ground operations team.
- On-Board methods which use explicit component-based models to diagnose system health and then automatically re-configure to respond to failures.
- Integrated software capabilities that allow automated science rovers to respond to high level goals such as "advance to a nearby interesting rock and analyze it." This could include perception of camera and other sensor data, position determination and path planning, science planning, and automated analysis of resulting science data.
- On-Board Real-Time Vehicle Health Management systems that perform quickly enough to monitor a flight control system (including spacecraft and fixed/rotary wing aircraft) in a highly dynamic environment, and respond to anomalies with suggested recovery or mitigation actions.
- Software generation tools which capture designer intent and performance expectations and that embed extra knowledge into the generated code for use by automated software analysis tools doing validation and verification, system optimization, and performance envelope exception handling.
- Application of automated reasoning and formal methods for high-assurance tools for program synthesis and program verification.. Of special interest are tools for synthesis and verification of new kinds of software capabilities, including autonomy software, software that learns and adapts, and software for distributed systems such as air traffic control.

Technologies for Augmentation of Operations Performance

- Algorithms, software, and workflow processes that allow ground operations teams to perform at the same level with greatly reduced personnel, and to respond faster and better to any unexpected contingency.

- Tools that allow spoken language interaction with automated systems. Of special interest are tools targeted towards use by astronauts in an orbiting or planetary habitat as well as for interaction with planetary vehicles and science rovers.
- Innovative hardware and software systems that improve operator efficiency for tele-operating robotic systems via advanced displays, controls and telepresence interfaces as well as technologies to enhance teleoperations applications. Teleoperations, in this context, includes telerobotics, telescience, telepresence, and distributed collaborative virtual environments. Application areas include flight and ground operations development, analyses, training, and support.
- Innovative concepts for augmenting the simulation and 3-D visualization capabilities of advanced airport/spaceport facilities like Future Flight Central (FFC) at Ames Research Center. Specific interest areas include 3-D visualization of aircraft noise, wake vortices, and dynamic weather conditions. Creative concepts that enable alternative uses of FFC-like facilities (e.g., aircraft carrier operation visualization) are also of interest.
- Advances in the ability of globally distributed control centers to cooperate in the control of fleets of spacecraft or multiple satellites occupying the same orbital slot.

Topic 2: Atmospheric Flight Operations

NASA Installation: **Dryden Flight Research Center**

<http://www.dfrc.nasa.gov>

Accurate simulation of aerospace vehicles flight characteristics is of great importance for both initial design and subsequent flight-testing. This Topic focuses on R&D for multidisciplinary modeling and simulation and for development of efficient software tools for aero-structures-controls-propulsion interaction simulation of flight vehicles. The benefit of this effort lies in ensuring flight safety, particularly during flight tests. Thus, this Topic solicits proposals for innovative, linear or nonlinear, aerospace vehicles dynamic systems modeling and simulation techniques. In particular:

- R & D in finite element based numerical simulation algorithms in computational fluid dynamics (CFD), structures, heat transfer and propulsion disciplines, among others. In particular, emphasis is placed in the development and application of state-of-the-art, novel, and computationally efficient solution schemes that enable effective simulation of complex practical problems such as modern flight vehicles like Hyper-X and X-33. Furthermore, the effective use of high-performance computing equipment and computer graphics development is considered an important aspect.
- Aeroelasticity and aeroservoelasticity, linear and nonlinear: Vehicle stability analysis is an important aspect of this Topic. Primary concern is with the development and application of novel, multidisciplinary interaction simulation software and correlation of such analysis results with flight test data.

Topic 3: Scientific Research

NASA Installation: **Goddard Space Flight Center**

<http://www.gsfc.nasa.gov>

This Center of Excellence emphasizes support for two of NASA's Strategic Enterprises:

The mission of the Space Science Enterprise is to solve mysteries of the universe, explore the solar system, discover planets around other stars, search for life beyond Earth, chart the evolution of the universe and understand its galaxies, stars, planets, and life. It seeks to understand the universe from the beginning of time, looking ever deeper with increasingly capable telescopes to scan the entire electromagnetic spectrum from gamma rays to radio wavelengths.

The mission of the Earth Science Enterprise is to study the Earth and its environment by monitoring incoming solar radiation and observing the atmosphere, oceans, land and its biota, and the cryosphere to determine their influence on weather, climate, and geodynamics. It studies and implements use of the unique vantagepoint of space to enable monitoring of the dynamic global Earth system to record and understand natural changes and distinguish these from

those induced by human activities. In addition, the Earth Science Enterprise uses in-situ and airborne measurement systems to verify and complement data acquired from Earth orbiting satellites and Unmanned Aerial Vehicles (UAV's).

Breakthroughs in materials, designs, and processes to improve functional performance, increase viable bandwidths, and reduce volume, mass, and power of sensors, detectors, and remote sensing systems are sought in the three following areas to enable the space and Earth science missions of the future.

High Performance Remote Sensing Components and Systems. Proposals that incorporate innovative architectures, new technologies, and advanced remote sensing techniques to measure space and Earth science parameters are sought:

- Ice thickness (techniques for sea ice).
- Meteor detection and spectral analysis systems for the spectroscopic characterization of meteors entering the Earth's atmosphere using intrinsic UV emission lines generated during re-entry.
- Sensing systems for the measurement of the location, flux, and timing of cosmological x-ray and γ -ray sources
- X-ray and Gamma ray source devices for the calibration and characterization of space flight high energy instruments.
- Energy resolving sensors that operate above 4K. These should have at least 4 energy bands and can operate anywhere between X-ray and Sub-mm.
- Sensing systems for the measurement of elemental abundances of cosmic ray sources.
- High speed, low power, low signal analog electronics for high energy detector systems.
- Far infrared detector systems for operation at temperatures less than or approximately equal to 80 K
- Optical correlators for microwave systems.
- 3D (2 spatial, 1 energy) photon counting detectors for spectroscopic imaging in the visible & UV.
- Precision lightweight optics (precision defined as surface figure <0.01 waves rms @633nm, surface roughness <2 angstroms, lightweight defined as approaching NGST metric 15 kg/m²) for application to astronomical investigations.
- High spatial resolution (0.1 arc second or better), light weight, ground testable optical systems for visible, UV, and EUV solar investigations.
- Advanced diffraction gratings for high spatial and spectral resolution observations.
- Super conducting devices including detectors, electronics, magnetic coolers or their components, and magnetic mechanisms.

In-Situ Devices. Systems are desired that enable new or greatly improved measurements of physical parameters of materials in contact or close proximity to the device. These measurements are required for validation of remote sensing systems and as input to science databases:

- Cloud physics (extinction and absorption coefficients, drop size distribution, liquid water, etc.).
- Salinity (ocean surface).
- Fluorescence (vegetation and ocean).
- Devices for sub-surface (from the surface to few meters depth) composition and distribution imaging.
- Soil moisture (surface-1 meter).
- Devices for kilometer scale aquifer identification and imaging.
- Vector magnetic field and electric field sensors in planetary, interplanetary, and local interstellar environments
- Devices for the measurement of flux and timing of x-ray and gamma-ray sources.
- High temperature brazing/welding techniques for the fabrication of ceramic, graphite and metal components operable to 2000K over a wide span of environmental factors including the presence of acidic, oxidizing & reducing vapors for use in diagnostic systems deployed in extremely hostile environments.

Miniaturized Sensors and Instruments. Reductions in the volume, weight, power and parts count of current remote sensing payloads result in a significant decrease in mission cost and are therefore highly desirable:

- Micropulse lidar systems for measurement of atmospheric constituents including clouds, aerosols and water vapor using multiple wavelengths. Systems must be fully eye safe, compact and capable of continuous autonomous operation.
- Widely tunable (> 60 nm), single frequency, compact (< 1 cubic inch volume) semiconductor lasers.
- Advanced solid-state infrared lasers including room temperature, solid-state lasers tunable in the range from 2 to 20 microns, and cryogenic, color-center crystals that can lase beyond 3.5 microns for the fabrication of compact atmospheric instrumentation.
- High quantum efficiency ($> 10\%$), photon counting, near infrared (1- 2 micron) detectors for use in laser systems.
- Two dimensional avalanche photodiodes.
- Lightweight, low power cryogenic coolers for miniature systems.
- Miniature imaging radiometers (UV, VIS and IR).
- Compact hyperspectral systems.
- Panchromatic Fourier transform spectrometers.
- Lightweight x-ray telescope optics.
- X-ray and gamma-ray sensors and instruments for deployment on in-situ and orbital probes of Mars, the Moon, the moons of outer planets, asteroids or comets, including large-area, room-temperature, x-ray and gamma-ray detectors with the potential for position sensitive detection, low power, light weight, x-ray (machine x-ray or e-beam) and gamma-ray (neutron-beam generators) excitation sources, and miniaturized sampling sub-systems for x-ray fluorescence/diffraction experiments.
- Measurement of DC/AC electric and magnetic fields using advanced low mass, sensors.
- Ultra broad band pass communications systems for multi-spectral, time resolved imaging.
- Inflatable structures and antennas.

Unmanned Aerial Vehicle Technologies for Remote Sensing. Payload systems, avionics, real-time operating systems and remote sensing spectral imaging devices to support Unmanned Aerial Vehicles' (UAV) basic and applied science and application demonstrations (proposers need only to respond to a minimum of one of the following) :

- Low cost avionic's instrumentation for precise navigation and aircraft control: must have an attitude sampling rate greater than 25Hz and an accuracy greater than .2 degrees in roll and pitch.
- Real-time sensor fusion algorithms that combine low-cost inertial, GPS, magnetometer and other sensor inputs to deliver aircraft state vectors at a rate greater than 50Hz.
- Real-time operating system development environment to integrate (vendor-supplied) state vector solution and actuator-driver interfaces with (user-supplied) C/C++ coded navigation and control laws. The real-time operating system environment should enable the support of autonomous operations of remote sensing mission planning, execution and emergency procedures.
- Modular and configurable instrument payload subsystem to carry instruments from 5 to 30 kg in weight occupying a maximum volume of .4 cubic meters.
- Spectral imager instrument is to be less than 15 kg. and no larger than .1 cubic meters in volume. Must operate autonomously in coordination with the on-board flight plan and have a built-in data acquisition system. The spectral bands must all be co-registered and the data must be GPS time tagged. Spectral range should be within 300nm to 2500nm with a quantization bit resolution of 8-bit minimum.
- Low cost RF communication system for remote transfer of video & instrument payload data. Range must be greater than 20nm using less than 2 watts of power in frequencies higher than 1 Ghz.

Topic 4: Space Propulsion

NASA Installation: **Marshall Space Flight Center**

<http://www.msfc.nasa.gov>

This Center of Excellence seeks development of propulsion technologies that will enable dramatic improvements in space transportation safety, reliability and cost. Key to this goal is the application of innovative, non-traditional propulsion technologies, devices and systems that could significantly increase the structural margins of future launch systems and substantially reduce the mission times for interplanetary and deep space spacecraft.

Development of such technologies is sought to enable ambitious commercial, robotic and human exploration missions in the future.

The following are some specific areas that will provide significant advancements in space transportation capability and lead to development of safe, affordable, high-performance propulsion technologies:

- Propulsion applications of technology innovations in fission, fusion and other advanced energy production methods. Of special interest is research leading to application in commercial transportation and energy markets, and techniques for economical and environmentally acceptable testing.
- Research and technology advancement in antimatter production, storage, transportation, and utilization for application as a propulsion energy source. Of special interest is research leading to methods for convenient, low-cost antiproton production and robust, high-containment density storage devices.
- Enhancements to or development of new propulsion systems utilizing electromagnetic fields or solar interactions, such as solar/magnetic sails, solar thermal propulsion and electrodynamic tethers.
- Technology innovations for beamed power. Of special interest is research leading to economical launch of payloads and affordable electromagnetic transfer of power from space to earth.
- Research leading to "breakthrough" propulsive methods based on phenomena at the leading-edge of modern day physics.

Topic 5: Rocket Engine Test Operations

NASA Installation: **Stennis Space Center**

<http://www.ssc.nasa.gov>

Proposals are solicited for innovative concepts in the area of propulsion test operations. Proposals should support the reduction of overall propulsion test operations costs (recurring costs) and/or increase reliability and performance of propulsion ground test facilities and operations methodologies. Specific areas of interest in this subtopic include the following:

Facility and Test Article Health-Monitoring Technologies

- Innovative non-intrusive sensors for measuring flow rate, temperature, pressure, rocket engine plume constituents, and effluent gas detection
- Liquid level sensors for very high-pressure (over 8000 psi) for liquid hydrogen and liquid oxygen tanks using existing probe ports
- Rugged, high accuracy (0.2%) temperature measuring sensors and instrumentation for very high pressure, high flow rate cryogenic piping systems
- On-line particulate and quality sampling for facility propellant (liquid oxygen and hydrogen) and support gas systems (helium, hydrogen, oxygen, nitrogen, and missile-grade air)

Improvement in Ground-Test Operation, Safety, Cost-effectiveness, and Reliability

- Smart system components (control valves, regulators, and relief valves) that provide real-time closed-loop control, component configuration, automated operation, and component health
- Application of smart sensors to propulsion testing
- Improved long life, liquid oxygen compatible seal technology

Application of System Science to Ground Test Operations in a Resource Constrained Environment

- Digital simulation techniques to support decision making processes to address reliability, availability, and return on investment
- Techniques to reduce required sample size to maintain acceptable levels of confidence in cost data

9. Submission Forms and Certifications

Form 9A – Proposal Cover

Form 9B – Proposal Summary

Form 9C – Summary Budget

Model Cooperative Agreement

Model Allocation of Rights Agreement

FORM 9A - PROPOSAL COVER

1. RESEARCH TOPIC:

2. PROPOSAL TITLE:

3. SMALL BUSINESS CONCERN (SBC)

NAME:

ADDRESS:

CITY:

STATE/ZIP (9-DIGIT CODE):

PHONE:

FAX:

EIN/TAX ID:

NUMBER OF EMPLOYEES:

RESEARCH INSTITUTION (RI)

NAME:

ADDRESS:

CITY:

STATE/ ZIP (9-DIGIT CODE):

PHONE:

FAX:

EIN/TAX ID:

4. AMOUNT REQUESTED: \$ _____ DURATION: _____ MONTHS

5. CERTIFICATIONS: THE ABOVE SBC AND RI CERTIFY THAT*As defined in Section 2 of the Solicitation, the offeror qualifies as a:*

a. SBC	Yes	No
b. RI	Yes	No
c. Socially and economically disadvantaged SBC	Yes	No
d. Woman-owned SBC	Yes	No

As described in Section 3 of this solicitation, the offeror meets the following requirements completely:

e. Cooperative Agreement signed by the SBC and RI enclosed	Yes	No
f. All eleven parts of the technical proposal included	Yes	No
g. Subcontracts/consultants proposed?	Yes	No
i) If yes, limits on subcontracts/consultants met	Yes	No
ii) If yes, copy of agreement enclosed	Yes	No
h. Government equipment or facilities required?	Yes	No
i) If yes, signed statement enclosed in Part 8	Yes	No

6. ACN (AUTHORIZED CONTRACT NEGOTIATOR)

NAME:

E-MAIL:

7. THE SBC WILL PERFORM ____% OF THE WORK AND THE RI WILL PERFORM ____% OF THE WORK OF THIS PROJECT.

8. ENDORSEMENTS:

SBC OFFICIAL:

NAME:

TITLE:

PHONE:

E-MAIL:

SIGNATURE:

DATE:

PI/PM:

NAME:

EMPLOYER:

PHONE:

E-MAIL:

SIGNATURE:

DATE:

RI OFFICIAL:

NAME:

TITLE:

PHONE:

E-MAIL:

SIGNATURE:

DATE:

NOTICE: For any purpose other than to evaluate the proposal, this data shall not be disclosed outside the government and shall not be duplicated, used, or disclosed in whole or in part, provided that, if a funding agreement is awarded to this proposer as a result of or in connection with the submission of these data, the Government shall have the right to duplicate, use, or disclose the data to the extent provided in the funding agreement. This restriction does not limit the Government's right to use information contained in the data if it is obtained from another source without restriction. The data subject to this restriction are contained in pages _____ of this proposal.

Guidelines for Completing Proposal Cover

General: Complete Form 9A electronically by following the instructions provided in the electronic handbook. Print one copy of Form 9A and sign it manually. This will be the signed cover sheet for the paper copy of the proposal to be submitted to NASA along with the internet submission (see Sections 3.2, 6.2 for further instructions.)

- 1 **Research Topic:** NASA research topic number and title (Section 8).
2. **Proposal Title:** A brief, descriptive title, avoid words like "development of" and "study of" and do not use acronyms or trade names.
3. **Small Business Concern:** Full name and address of the company submitting the proposal. If a joint venture, list the company chosen to negotiate and receive contracts. If the name exceeds 40 keystrokes, please abbreviate.

Research Institution: Full name and address of the research institute.

Address:	Address where mail is received
City:	City name
State/Zip:	2-letter State designation (example VA for Virginia) and 9-digit Zip code (example 20705-3106)
Phone:	Number including area code
Fax:	Number including area code
EIN/TAX ID:	Employer Identification Number/Taxpayer ID
Number of Employees:	For SBC only

4. **Amount Requested:** Proposal amount from Budget Summary. The amount requested should not exceed \$100,000; round to nearest dollar; do not enter cents (see Sections 1.4.1, 5.1.1).

Duration: Proposed duration in months. The requested duration should not exceed 12 months (see Sections 1.4.1, 5.1.1).

5. **Certifications:** Answer Yes or No as applicable for 5a, 5b, 5c, and 5d (see Section 2 for definitions)

5e. Cooperative Agreement signed by the SBC and RI: By answering yes, the SBC/RI certifies that a Cooperative Agreement signed by both SBC and RI is enclosed in the proposal (see Sections 3.2.2, 3.2.6).

5f. All eleven parts of the technical proposal included: By answering yes, the SBC/RI certifies that the proposal consists of all eleven parts numbered and in the prescribed order (see Section 3.2.4).

5g. Subcontracts/consultants proposed? By answering yes, the SBC/RI certifies that subcontracts/consultants have been proposed and arrangements have been made to perform on the contract, if awarded.

- i) If yes, limits on subcontracting and consultants met: By answering yes, the SBC/RI certifies that business arrangements with other entities or individuals do not exceed 30 percent of the work (amount requested including cost sharing if any, less fee, if any) and is in compliance with Section 3.2.4, Part 9
- ii) If yes, copy of agreement enclosed: By answering yes, the SBC/RI certifies that a copy of any subcontracting or consulting agreements described in Section 3.2.4 Part 9 is included as required. Copy of the agreement may be submitted in a reduced size format.

- 5h. Government furnished equipment required? By answering yes, the SBC/RI certifies that unique, one-of-a-kind Government Furnished Facilities or Government Furnished Equipment are required to perform the proposed activities (see Sections 3.2.4 Part 8, 3.3 Part 7, 5.17). By answering no, the SBC/RI certifies that no such Government Furnished Facilities or Government Furnished Equipment are required to perform the proposed activities.
- i) If yes, signed statement enclosed in Part 8: By answering yes, the SBC/RI certifies that a statement describing the uniqueness of the facility and its availability to the offeror at specified times, signed by the appropriate Government official is enclosed in the proposal.
6. **ACN Name and E-mail:** Name and e-mail address of Authorized Contract Negotiator.
7. Proposals submitted in response to this Solicitation must be jointly developed by the SBC and the RI, and at least **40 percent** of the work (amount requested including cost sharing, less fee, if any) is to be performed by the SBC as the prime contractor, and at least **30 percent** of the work is to be performed by the RI (see Section 1.1).
8. **Endorsements:** The proposal cover must be signed by an official of the firm, proposed Principal Investigator/Project Manager and the RI Official.

The Proposal Cover is submitted with original signatures in paper form to NASA with the proposal.

FORM 9B - PROPOSAL SUMMARY

1. RESEARCH TOPIC:
2. PROPOSAL TITLE:
3. SMALL BUSINESS CONCERN
NAME:
ADDRESS:
CITY/STATE:
ZIP:
PHONE:
4. RESEARCH INSTITUTION
NAME:
ADDRESS:
CITY/STATE:
ZIP:
PHONE:
5. PRINCIPAL INVESTIGATOR/PROJECT MANAGER:
6. TECHNICAL ABSTRACT (LIMIT 200 WORDS):
7. POTENTIAL COMMERCIAL APPLICATION(S) (LIMIT 200 WORDS):

Guidelines for Completing Proposal Summary

Complete Form 9B electronically and print a copy for second page of the proposal.

1. **Research Topic:** Same as Proposal Cover.
2. **Proposal Title:** Same as Proposal Cover.
3. **Small Business Concern:** Same as Proposal Cover.
4. **Research Institution:** Same as Proposal Cover.
5. **Principal Investigator/Project Manager:** Same as Proposal Cover.
6. **Technical Abstract:** Summary of the offeror's proposed project in 200 words or less. The abstract must not contain proprietary information and must describe the NASA need addressed by the proposed R/R&D effort.
7. **Potential Commercial Application(s):** Summary of the direct or indirect commercial potential of the project, assuming the goals of the proposed R/R&D are achieved. Limit your response to 200 words.

FORM 9C - SUMMARY BUDGET

PROPOSAL NUMBER:

SMALL BUSINESS CONCERN:

PRINCIPAL INVESTIGATOR/PROJECT MANAGER:

DIRECT LABOR:

Category	Hours	Rate	Cost
			\$

TOTAL DIRECT LABOR:

(1) \$ _____

OVERHEAD COST

_____ % of Total Direct Labor or \$ _____

OVERHEAD COST:

(2) \$ _____

OTHER DIRECT COSTS (ODCs):

Category	Cost
	\$

TOTAL OTHER DIRECT COSTS:

(3) \$ _____

(1)+(2)+(3)=(4)

SUBTOTAL:

(4) \$ _____

GENERAL & ADMINISTRATIVE (G&A) COSTS

_____ % of Subtotal or \$ _____

G&A COSTS:

(5) \$ _____

(4)+(5)=(6)

TOTAL COSTS

(6) \$ _____

ADD PROFIT or SUBTRACT COST SHARING
(As applicable)**PROFIT/COST SHARING:**

(7) \$ _____

(6)+(7)=(8)

AMOUNT REQUESTED:

(8) \$ _____

THIS PROPOSAL IS SUBMITTED IN RESPONSE TO THE 2000 NASA STTR PROGRAM SOLICITATION AND REFLECTS OUR BEST ESTIMATES AS OF THIS DATE:

NAME AND TITLE (Typed):

SIGNATURE:

DATE:

Guidelines for Preparing Summary Budget

The offeror submits to the Government a pricing proposal of estimated costs with detailed information for each cost element, consistent with the offeror's cost accounting system. Prepare electronically, print and sign a paper copy for submission to NASA with the proposal.

This summary does not eliminate the need to fully document and justify the amounts requested in each category. Such documentation should be contained, as appropriate, on a budget explanation page immediately following the summary budget in the proposal.

Small Business Concern: Same as Proposal Cover.

Principal Investigator/Project Manager: Same as Proposal Cover.

Direct Labor: Enter labor categories proposed (e.g., Principal Investigator/Project Manager, Research Assistant/laboratory assistant, Analyst, administrative staff), labor rates and the hours for each labor category.

Overhead Cost: Specify current rate and base. Use current rate(s) negotiated with the cognizant federal negotiating agency, if available. If no rate(s) has (have) been negotiated, a reasonable indirect cost (overhead) rate(s) may be requested for Phase-I that will be subject to approval by NASA. If a current negotiated rate(s) is (are) not available, NASA will negotiate an approved rate(s) with the offeror. The offeror may use whatever number and types of overhead rates that are in accordance with the firm's accounting system and approved by the cognizant federal negotiating agency, if available. Multiply Direct Labor Cost by the Overhead Rate to determine the Overhead Cost.

Example: A typical SBC might have an overhead rate of 30%. If the total direct labor costs proposed are \$50,000, the computed overhead costs for this case would be $.3 \times 50,000 = \$15,000$, if the base used is the total direct labor costs.

or provide a number for total estimated overhead costs to execute the project.

Other Direct Costs (ODCs): (Include budget for the Research Institution as a Other Direct Cost.)

- Materials and Supplies: Indicate types required and estimate costs.
- Documentation Costs or Page Charges: Estimate cost of preparing and publishing project results.
- Subcontracts: Include a completed budget including hours and rates and justify details. (Section 3.2.4, Part 9.)
- Consultant Services: Indicate name, daily compensation, and estimated days of service.
- Computer Services: Computer equipment leasing is included here.
- Equipment: List each item of permanent equipment to be purchased, its price, and explain its relation to the project.

List all other direct costs that are not otherwise included in the categories described above.

Subtotal (4): Sum of (1) Total Direct Labor, (2) Overhead and (3) ODCs

General and Administrative (G&A) Costs (5): Specify current rate and base. Use current rate negotiated with the cognizant federal negotiating agency, if available. If no rate has been negotiated, a reasonable indirect cost (G&A) rate may be requested for Phase-I that will be subject to approval by NASA. If a current negotiated rate is not available, NASA will negotiate an approved rate with the offeror. Multiply (4) subtotal (Total Direct Cost) by the G&A rate to determine G&A Cost.

or provide an estimated G&A costs number for the proposal.

Total Costs (6): Sum of Items (4) and (5). Note that this value will be used in verifying the minimum required work percentage for the SBC and RI.

Profit/Cost Sharing (7): See Sections 5.11 and 5.12. Profit to be added to total budget, shared costs to be subtracted from total budget, as applicable.

Amount Requested (8): Sum of Items (6) and (7), not to exceed \$100,000.

Name and Title of SBC Official:

Signature and Date

MODEL COOPERATIVE AGREEMENT

By virtue of the signatures of our authorized representatives, _____ (Small Business Concern), and _____ (Research Institution) _____ have agreed to cooperate on the _____ (Proposal Title) _____ Project, in accordance with the proposal being submitted with this agreement.

This agreement shall be binding until the completion of all Phase-I activities, at a minimum. If the _____ (Proposal Title) _____ Project is selected to continue into Phase-II, the agreement may also be binding in Phase-II activities that are funded by NASA, then this agreement shall be binding until those activities are completed. The agreement may also be binding in Phase-III activities that are funded by NASA.

After notification of Phase-I selection and prior to contract release, we shall prepare and submit, if requested by NASA, an **Allocation of Rights Agreement**, which shall state our rights to the intellectual property and technology to be developed and commercialized by the _____ (Proposal Title) _____ Project. We understand that our contract cannot be approved and project activities may not commence until the **Allocation of Rights Agreement** has been signed and certified to NASA.

Please direct all questions and comments to _____ (Small Business Concern representative) at _____ (Phone Number) _____

Signature

Name/title

Small Business Concern

Signature

Name/title

Research Institution

**SMALL BUSINESS TECHNOLOGY TRANSFER (STTR) PROGRAM
MODEL ALLOCATION OF RIGHTS AGREEMENT**

This Agreement between _____, a small business concern organized as a _____ under the laws of _____ and having a principal place of business at _____, ("SBC") and _____, a research institution having a principal place of business at _____, ("RI") is entered into for the purpose of allocating between the parties certain rights relating to an STTR project to be carried out by SBC and RI (hereinafter referred to as the "PARTIES") under an STTR funding agreement that may be awarded by _NASA_____ to SBC to fund a proposal entitled " _____" submitted, or to be submitted, to by SBC on or about _____, 200__.

1. Applicability of this Agreement.

(a) This Agreement shall be applicable only to matters relating to the STTR project referred to in the preamble above.

(b) If a funding agreement for STTR project is awarded to SBC based upon the STTR proposal referred to in the preamble above, SBC will promptly provide a copy of such funding agreement to RI, and SBC will make a sub-award to RI in accordance with the funding agreement, the proposal, and this Agreement. If the terms of such funding agreement appear to be inconsistent with the provisions of this Agreement, the Parties will attempt in good faith to resolve any such inconsistencies.

However, if such resolution is not achieved within a reasonable period, SBC shall not be obligated to award nor RI to accept the sub-award. If a sub-award is made by SBC and accepted by RI, this Agreement shall not be applicable to contradict the terms of such sub-award or of the funding agreement awarded by NASA to SBC except on the grounds of fraud, misrepresentation, or mistake, but shall be considered to resolve ambiguities in the terms of the sub-award.

(c) The provisions of this Agreement shall apply to any and all consultants, subcontractors, independent contractors, or other individuals employed by SBC or RI for the purposes of this STTR project.

2. Background Intellectual Property.

(a) "Background Intellectual Property" means property and the legal right therein of either or both parties developed before or independent of this Agreement including inventions, patent applications, patents, copyrights, trademarks, mask works, trade secrets and any information embodying proprietary data such as technical data and computer software.

(b) This Agreement shall not be construed as implying that either party hereto shall have the right to use Background Intellectual Property of the other in connection with this STTR project except as otherwise provided hereunder.

(1) The following Background Intellectual Property of SBC may be used nonexclusively and, except as noted, without compensation by RI in connection with research or development activities for this STTR project (if "none" so state): _____;

(2) The following Background Intellectual Property of RI may be used nonexclusively and, except as noted, without compensation by SBC in connection with research or development activities for this STTR project (if "none" so state):

(3) The following Background Intellectual Property of RI may be used by SBC nonexclusively in connection with commercialization of the results of this STTR project, to the extent that such use is reasonably necessary for practical, efficient and competitive commercialization of such results but not for commercialization independent of the commercialization of such results, subject to any rights of the Government therein and upon the condition that SBC pay to RI, in addition to any other royalty including any royalty specified in the following list, a royalty of _____% of net sales or leases made by or under the authority of SBC of any product or service that embodies, or the manufacture or normal use of which entails the use of, all or any part of such Background Intellectual Property (if "none" so state):

3. Project Intellectual Property.

(a) "Project Intellectual Property" means the legal rights relating to inventions (including Subject Inventions as defined in 37 CFR § 401), patent applications, patents, copyrights, trademarks, mask works, trade secrets and any other legally protectable information, including computer software, first made or generated during the performance of this STTR Agreement.

(b) Except as otherwise provided herein, ownership of Project Intellectual Property shall vest in the party whose personnel conceived the subject matter, and such party may perfect legal protection in its own name and at its own expense. Jointly made or generated Project Intellectual Property shall be jointly owned by the Parties unless otherwise agreed in writing. The SBC shall have the first option to perfect the rights in jointly made or generated Project Intellectual Property unless otherwise agreed in writing.

(1) The rights to any revenues and profits, resulting from any product, process, or other innovation or invention based on the cooperative shall be allocated between the SBC and the RI as follows:

SBC Percent: _____ RI Percent: _____

(2) Expenses and other liabilities associated with the development and marketing of any product, process, or other innovation or invention shall be allocated as follows: the SBC will be responsible for _____ percent and the RI will be responsible for _____ percent.

(c) The Parties agree to disclose to each other, in writing, each and every Subject Invention, which may be patentable or otherwise protectable under the United States patent laws in Title 35, United States Code. The Parties acknowledge that they will disclose Subject Inventions to each other and the Agency within two months after their respective inventor(s) first disclose the invention in writing to the person(s) responsible for patent matters of the disclosing Party. All written disclosures of such inventions shall contain sufficient detail of the invention, identification of any statutory bars, and shall be marked confidential, in accordance with 35 U.S.C. § 205.

(d) Each party hereto may use Project Intellectual Property of the other nonexclusively and without compensation in connection with research or development activities for this STTR project, including inclusion in STTR project reports to the AGENCY and proposals to the AGENCY for continued funding of this STTR project through additional phases.

(e) In addition to the Government's rights under the Patent Rights clause of 37 CFR § 401.14, the Parties agree that the Government shall have an irrevocable, royalty free, nonexclusive license for any governmental purpose in any Project Intellectual Property.

(f) SBC will have an option to commercialize the Project Intellectual Property of RI, subject to any rights of the Government therein, as follows—

(1) Where Project Intellectual Property of RI is a potentially patentable invention, SBC will have an exclusive option for a license to such invention, for an initial option period of _____ months after such invention has been reported to SBC. SBC may, at its election and subject to the patent expense reimbursement provisions of this section, extend such option for an additional _____ months by giving written notice of such election to RI prior to the expiration of the initial option period. During the period of such option following notice by SBC of election to extend, RI will pursue and maintain any patent protection for the invention requested in writing by SBC and, except with the written consent of SBC or upon the failure of SBC to reimburse patenting expenses as required under this section, will not voluntarily discontinue the pursuit and maintenance of any United States patent protection for the invention initiated by RI or of any patent protection requested by SBC. For any invention for which SBC gives notice of its election to extend the option, SBC will, within _____ days after invoice, reimburse RI for the expenses incurred by RI prior to expiration or termination of the option period in pursuing and maintaining (i) any United States patent protection initiated by RI and (ii) any patent protection requested by SBC. SBC may terminate such option at will by giving written notice to RI, in which case further accrual of reimbursable patenting expenses hereunder, other than prior commitments not practically revocable, will cease upon RI's receipt of such notice. At any time prior to the expiration or termination of an option, SBC may exercise such option by giving written notice to RI, whereupon the parties will promptly and in good faith enter into negotiations for a license under RI's patent rights in the invention for SBC to make, use and/or sell products and/or services that embody, or the development, manufacture and/or use of which involves employment of, the invention. The terms of such license will include: (i) payment of reasonable royalties to RI on sales of products or services which embody, or the development, manufacture or use of which involves employment of, the invention; (ii) reimbursement by SBC of expenses incurred by RI in seeking and maintaining patent protection for the invention in countries covered by the license (which reimbursement, as well as any such patent expenses incurred directly by SBC with RI's authorization, insofar as deriving from RI's interest in such invention, may be offset in full against up to _____ of accrued royalties in excess of any minimum royalties due RI); and, in the case of an exclusive license, (iii) reasonable commercialization milestones and/or minimum royalties.

(2) Where Project Intellectual Property of RI is other than a potentially patentable invention, SBC will have an exclusive option for a license, for an option period extending until _____ months following completion of RI's performance of that phase of this STTR project in which such Project Intellectual Property of RI was developed by RI. SBC may exercise such option by giving written notice to RI, whereupon the parties will promptly and in good faith enter into negotiations for a license under RI's interest in the subject matter for SBC to make, use and/or sell products or services which embody, or the development, manufacture and/or use of which involve employment of, such Project Intellectual Property of RI. The terms of such license will include: (i) payment of reasonable royalties to RI on sales of products or services that embody, or the development, manufacture or use of which involves employment of, the Project Intellectual Property of RI and, in the case of an exclusive license, (ii) reasonable commercialization milestones and/or minimum royalties.

(3) Where more than one royalty might otherwise be due in respect of any unit of product or service under a license pursuant to this Agreement, the parties shall in good faith negotiate to ameliorate any effect thereof that would threaten the commercial viability of the affected products or services by providing in such license(s) for a reasonable discount or cap on total royalties due in respect of any such unit.

4. Follow-on Research or Development.

All follow-on work, including any licenses, contracts, subcontracts, sub-licenses or arrangements of any type, shall contain appropriate provisions to implement the Project Intellectual Property rights provisions of this agreement and insure that the Parties and the Government obtain and retain such rights granted herein in all future resulting research, development, or commercialization work.

5. Confidentiality/Publication.

(a) Background Intellectual Property and Project Intellectual Property of a party, as well as other proprietary or confidential information of a party, disclosed by that party to the other in connection with this STTR project shall be received and held in confidence by the receiving party and, except with the consent of the disclosing party or as permitted under this Agreement, neither used by the receiving party nor disclosed by the receiving party to others, provided that the receiving party has notice that such information is regarded by the disclosing party as proprietary or confidential. However, these confidentiality obligations shall not apply to use or disclosure by the receiving party after such information is or becomes known to the public without breach of this provision or is or becomes known to the receiving party from a source reasonably believed to be independent of the disclosing party or is developed by or for the receiving party independently of its disclosure by the disclosing party.

(b) Subject to the terms of paragraph (a) above, either party may publish its results from this STTR project. However, the publishing party will give a right of refusal to the other party with respect to a proposed publication, as well as a _____ day period in which to review proposed publications and submit comments, which will be given full consideration before publication. Furthermore, upon request of the reviewing party, publication will be deferred for up to _____ additional days for preparation and filing of a patent application which the reviewing party has the right to file or to have filed at its request by the publishing party.

6. Liability.

(a) Each party disclaims all warranties running to the other or through the other to third parties, whether express or implied, including without limitation warranties of merchantability, fitness for a particular purpose, and freedom from infringement, as to any information, result, design, prototype, product or process deriving directly or indirectly and in whole or part from such party in connection with this STTR project.

(b) SBC will indemnify and hold harmless RI with regard to any claims arising in connection with commercialization of the results of this STTR project by or under the authority of SBC. The PARTIES will indemnify and hold harmless the Government with regard to any claims arising in connection with commercialization of the results of this STTR project.

7. Termination.

(a) This agreement may be terminated by either Party upon days written notice to the other Party. This agreement may also be terminated by either Party in the event of the failure of the other Party to comply with the terms of this agreement.

(b) In the event of termination by either Party, each Party shall be responsible for its share of the costs incurred through the effective date of termination, as well as its share of the costs incurred after the effective date of termination, and which are related to the termination. The confidentiality, use, and/or non-disclosure obligations of this agreement shall survive any termination of this agreement.

AGREED TO AND ACCEPTED--

Small Business Concern

By: _____ Date: _____
 Print Name: _____
 Title: _____

Research Institution

By: _____ Date: _____
 Print Name: _____
 Title: _____

CHECK LIST

For assistance in completing your proposal, use the following checklist to ensure your submission is complete.

1. The entire proposal including any supplemental material shall not exceed a total of 25 8.5 x 11 inch pages, including Cooperative Agreement. (Sections 3.2.2, 3.2.6).
2. The proposal and innovation is submitted for one topic only. (Sections 1.4.1, 5.1.1).
3. The entire proposal is submitted consistent with the requirements and in the order outlined in Section 3.2
4. The technical proposal contains all eleven parts in order. (Section 3.2.4).
5. Certifications in Form 9A are completed.
6. Proposed funding does not exceed \$100,000. (Sections 1.4.1, 5.1.1).
7. Proposed project duration should not exceed 12 months. (Sections 1.4.1, 5.1.1).
8. Cooperative Agreement is signed and included. (Sections 3.2.2, 3.2.6).
9. Printed version of Forms 9A, 9B and 9C included in the postal submission.
10. Postal submission includes an original signed proposal with all forms plus three copies (Section 6.3).
11. Entire proposal including Forms 9A, 9B and 9C submitted via the internet.
12. Internet submission must be consistent with Postal submissions.
13. Proposals must be received by the NASA SBIR/STTR Program Support Office no later than by 5:00 p.m. EDT on Wednesday, May 10, 2000. (Section 6.3.3).